

FORESTLAND STEWARDS

Shingletown community success story

In the past five years, the residents of Shingletown have removed 1,266 tons of flammable vegetation from their area. That is 2,532,000 pounds of fuel no longer available to an unwanted fire.

The Shingletown Community Fire Safe Program began in early 1993 when a California Forestry Incentive Program (CFIP) grant helped to develop community support for increasing survivability in their wildland community. The Shasta-Trinity Ranger Unit, with leadership from Battalion Chief Ralph Minnich, worked with residents on education, demonstration of an aesthetically pleasing limited shaded fuel break, and a fuel reduction project that resulted in the removal and chipping of 90 green tons of vegetation and woody debris. With funds obtained from sale of the chips to the Wheelabrator Energy Company in Anderson, two water storage tanks were purchased for use in case of a fire. Approximately 87 residents participated that first year.

Following years saw the program expanded to other neighborhoods in



Local residents provide the labor to remove fuel from individual properties and place it at the roadside to be chipped and processed into energy.

the Shingletown area. Neighborhood Coordinators acted as resident contacts and a Strategic Wildfire Defense Plan was developed for the area. In 1997, approximately 200 residents participated in the Fire Safe Program and 389 green tons of vegetation was chipped at a cost of \$51 per green ton.

The Shingletown Spring Fuel Reduction Program has been a resounding success, exceeding expectations in each

of its five years. Local participants remove excess vegetation and woody material from their property and place it at the roadside to be collected, chipped and hauled to the energy company to provide fuel for the wood-powered electrical generating facility.

The Shingletown community is safer thanks to the outstanding efforts of hundreds of volunteers and the support of the Shasta-Trinity Ranger Unit. ▲

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Fire Safety

First El Niño, now El Fuego

In an effort to alert landowners to the dangers of this summer's fire season, the California Department of Forestry & Fire Protection (CDF) and the Fire Safe Council have launched a statewide educational campaign called *El Fuego*, "the fire."

The concern is that El Niño rains may have lulled many people into thinking that fire danger will be lower this year. On the contrary, increased vegetative growth from the rains will eventually dry out to provide more than average fuel for wildfire. The message to landowners is to prepare their homes for wildfire and take those steps that could ultimately save their lives and homes as well as the lives of firefighters.

Residents must trim brush and trees, establish defensible space by clearing flammable vegetation at least 30 feet from their homes, clean dead leaves and needles from roofs and gutters, install fire resistant roofs, and test smoke detectors. There are 21 CDF



ranger units statewide to provide homeowners with fire safe regulations and information such as fire safe checklists, landscaping guidelines and educational videos.

Residents can contact their local fire department or CDF ranger unit to request a fire safe home inspection or to obtain information about protecting themselves from wildfire. Local fire safe councils are also available to answer residents' questions or provide additional information about community fire safety education and preparation. ▲

Website up and ready for visitors

Be sure to visit the California Forest Stewardship Program website for information of interest to forestland owners. There you will find contacts for technical and financial assistance, articles on good stewardship practices, a comprehensive resource calendar, and, if that's not enough, links to many other forest-related sites.

We plan to continually expand and improve the site so check in often and let us know what you would like to see there. Your comments and suggestions are always welcome.

<http://ceres.ca.gov/foreststeward>

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“Just as people fortified against El Niño,
we need them to prepare for the fire season.

A few simple steps could mean the difference
of a life or the safety of your home.”

Richard Wilson, Director,
California Department of Forestry & Fire Protection



Seasonal Stewardship

Seven steps to creating a defensible space

Defensible space refers to that area between a house and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and which provides an opportunity for firefighters to safely defend the house. It is a key area that can make the difference between a house surviving a wildfire or being destroyed.

If your parcel is one acre or less, your home, improvements, and forest vegetation all constitute your defensible space and need to be managed in order to protect your family, your investments, and your native forest trees.

For owners of parcels larger than an acre, your defensible space is the Forest-Woodland Protection Zone where you can practice defensible space techniques to enhance the forest health and protect your portion of the habitat.

1 Determine the amount of defensible space necessary (see table below), property boundaries, and ownership of adjacent parcels.

2 Evaluate the area surrounding your home in terms of being a defensible space. Ask the questions:

- ◆ Are there any dead fuels?
- ◆ Is there a continuous horizontal layer of vegetation?

- ◆ Are there ladder fuels?
- ◆ Does the height of surface fuels (shrubs, grasses, etc.) exceed 18"?

3 Develop a plan for correcting the problems identified in Step 2, coordinate with adjacent landowners if necessary, and incorporate existing formal landscape features.

4 Secure necessary permits and have trees marked for removal by a qualified forester if applicable.

5 Implement the plan developed in Step 3.

6 Remove all slash generated by fuel modification efforts as soon as possible.

7 Maintain the defensible space on a routine basis.

*For more information and details on each of these steps, refer to the **Defensible Space & Healthy Forest Handbook** (see p. 10).*

Types of dead fuels and recommended practice

Standing Dead Tree. Remove all standing dead trees from within the defensible space. If desired, leave one or two standing dead trees per acre to provide wildlife habitat and remove lower tree limbs to height of 15 feet.

Down Dead Tree. Remove all down dead trees within the defensible space if they have recently fallen and are not yet embedded into the ground. Down trees that are embedded into soil and which cannot be removed without soil disturbance should be left in place.

Dead Shrubs. Remove all dead shrubs from within the defensible space.

Dead Branches. Remove all dead branches from living shrubs and trees and from dead trees to be retained for wildlife purposes to a height of 15 feet. Gather and remove branches which are lying on the ground within the defensible space.

Cured Grass and Forbs. Once grass and forbs have dried out or cured, cut down and remove clippings from the defensible space.

Dead Needles (on the ground). For thick layers of needles lying on the ground surface, reduce the amount of needles. A thick layer of needles would be accumulations of needles that are more than three or four needles deep. Reduce excess needles to create a thin layer of needles. Do **not** remove all needles. Take care not to disturb the duff layer (area at the ground surface where needles are decomposing).

Dead Needles (other than on the ground). Remove all dead needles still attached to living trees to height of 15 feet. Remove all dead needles which accumulate on the roof and in rain gutters on a routine basis.

*from the **Defensible Space and Healthy Forest Handbook**.* ▲

30' May Not Be Enough

Appropriate Defensible Space Distances from House

<u>PERCENT SLOPE</u>	<u>UPHILL*</u>	<u>SIDES*</u>	<u>DOWNHILL*</u>
Level to 20%	100 feet	100 feet	100 feet
21% to 40%	150 feet	150 feet	200 feet
41% to 60%	200 feet	200 feet	400 feet

* Direction of slope from house
Adapted from *Wildland Home Fire Risk Meter*, Simmerman and Fischer, 1990



Local Assistance

A Brief History of Resource Conservation Districts (RCDs)

Jean Saffell

In the 1930s, years of poor land use practices and an extended drought resulted in the "Dust Bowl." This disaster led to the creation of the USDA Soil Conservation Service (SCS) in 1935. The primary purpose of the SCS was to help farmers and ranchers manage their land, to minimize soil erosion, and maximize soil productivity. The agency is now called the Natural Resources Conservation Service (NRCS).

In order to deliver these services locally, a federal "Standard Act" was passed in which formation and operation of conservation districts were outlined, from which states could develop their own legislation. Resource Conservation Districts (RCDs) were formed under California State law in 1938. These districts, governed by locally elected or appointed boards, were to develop and carry out local resource conservation programs with technical help from the SCS and state agencies.

These early districts concentrated on soil and water conservation on private agricultural land, an emphasis resulting from the Dust Bowl disaster of the '30s.

RCDs today help landowners, groups, and public officials conserve soil and water, including forests and related habitats, through the proper management of those resources. Districts work to secure the voluntary adoption of conser-



Creating fuel breaks for wildfire management is just one concern of modern RCDs.

vation practices which help control water runoff, prevent erosion, stabilize soil, improve forest lands, conserve urban and recreational lands, conserve wildlife areas, and enhance watersheds.

Modern day RCDs are governed by the California Public Resources Code, Division 9, which establishes the framework for conducting the business of resource conservation districts in the state. California has 103 RCDs covering approximately eighty percent of the state. Assessments on real property fund some of the RCDs while others receive donations from the public and hold fundraising activities.

The role of RCDs has expanded over the years from assisting individual land users with erosion control and development projects on agricultural land to a much broader range of functions which include:

- ◆ Community and land use planning
- ◆ Agricultural land protection
- ◆ Watershed planning and management
- ◆ Wetland preservation
- ◆ Water conservation and water

quality protection and enhancement

- ◆ Soil and water management on nonagricultural lands
- ◆ Wildlife habitat enhancement
- ◆ Recreational land restoration
- ◆ Irrigation management
- ◆ Conservation education
- ◆ Economic development
- ◆ Forest stewardship

As a forest landowner, your local resource conservation district is your key to locally led conservation activities, technical assistance and cost-share programs to help you manage your land.

To find a district near you, contact California Association of RCDs, 801 K Street, Suite 1318, Sacramento, CA 95814, phone: 916-447-7237; e-mail: carcd@ns.net; web site: <http://ceres.ca.gov/carcd/>. You can also get information from the Forest Stewardship Helpline at 1-800-738-TREE.

Jean Saffell is Area IX Coordinator for California Association of RCDs. Information in this article provided by Coarsegold RCD at: <http://www.sierranet.net/web/crsercd/>. ▲



Fish Issues

Follow the discussion on salmon listings

Most people will agree that rivers that can no longer support fish should be restored if possible. However, recent listings of salmon and steelhead populations have many landowners confused and nervous. What do these listings mean and how do they affect you and your stewardship planning?

Unfortunately, we can't give any clear answers to these questions yet as the rules are currently in the process of being decided. While the listings will require landowners to conform to the Endangered Species Act, the specifics on requirements and enforcement remain to be determined.

What is clear is that these fish have been rapidly declining and that reversing this trend is going to be a priority. As an individual landowner, you can "do the right thing" by making fish-friendly decisions on your land. (If you need advice, talk to your local RCD, NRCS, or UC Extension advisor.)

At the state and local watershed level you can also have a say. Stakeholder input (which includes the public and landowners) is part of the decision-making process. However, expect to find a steep learning curve. To be effective you will have to learn to speak the language and understand the framework.

The National Marine Fisheries Service (NMFS—pronounced "nymphs") is the federal agency responsible for anadromous fish issues (anadromous fish live part of their lives in rivers and part in the sea). NMFS decides what groups of fish need protection as "threatened or endangered" species and they are currently working with the state and other agencies to determine how to protect the listed populations.

We are not talking about a small

area here. Most of the migratory salmonids in California are either listed or proposed for listing so this issue concerns people in a large portion of the state.

The focus for protection is on land use activities which includes forestry-related issues. The Forest Practice Rules

and Regulations will be reviewed in that context later this summer. There are also various types of conservation plans under development to meet the protection requirements for the fish while allowing for management activities.

Watch this space for further information and developments. ▲

Bureaucratic Alphabet Soup

Letters and numbers roll off the tongues of those actively working on these issues but it's foreign to the rest of us. Don't be self-conscious about asking for a translation when people around you start talking in shorthand. Here's some background to get you started.

NMFS (National Marine Fisheries Service). The Federal agency responsible for anadromous fish issues.

ESU (Evolutionarily Significant Units). Genetically distinct groups of fish.

CWA (Clean Water Act). Passed by Congress in 1972 to "restore and maintain the chemical, physical and biological integrity of the Nation's waters."

Section 303(d) of the Clean Water Act requires states to develop a priority ranking of waters that are not meeting assigned water quality standards. The 303(d) list is submitted to the EPA for review, approval and publication in the Federal Register.

Section 404 of the Clean Water Act gives the Army Corps of Engineers the authority to issue permits for instream construction and excavation activities.

TMDL (Total Maximum Daily Load). A framework for assessing the problems that have led to a river's *impairment* (a river is "impaired" when it doesn't meet water quality standards) and establishment of a plan for its restoration. All rivers on the 303(d) list must have a TMDL.

RWQCB (Regional Water Quality Control Board) has primary responsibility for establishing water quality standards, reviewing data, developing the 303(d) list, and developing TMDLs.

EPA (Environmental Protection Agency). The Federal agency that provides funds to RWQCB and has ultimate responsibility for ensuring TMDL development.

ESA (Endangered Species Act). The Federal law that authorizes NMFS and FWS (Fish & Wildlife Service) to list species as endangered or threatened and to protect species so listed.

Section 9 of the ESA prohibits "*take*" of endangered species. (Take is anything that will cause harm to the species including habitat degradation).

Section 10 of the ESA provides for the permitting of "take" that is incidental to an otherwise lawful activity. The permit issued is an Incidental Take Permit (ITP).

HCP (Habitat Conservation Plan). Comprehensive plan developed to minimize near-term habitat damage and provide for long-term habitat recovery.

(to be continued...)



Hot Issues in Forestry

Biomass in California: Is it a valuable resource?

John R. Shelly, PhD

Biomass is everywhere! There is a biomass component to every forest and in fact it even extends into agriculture and urban communities.

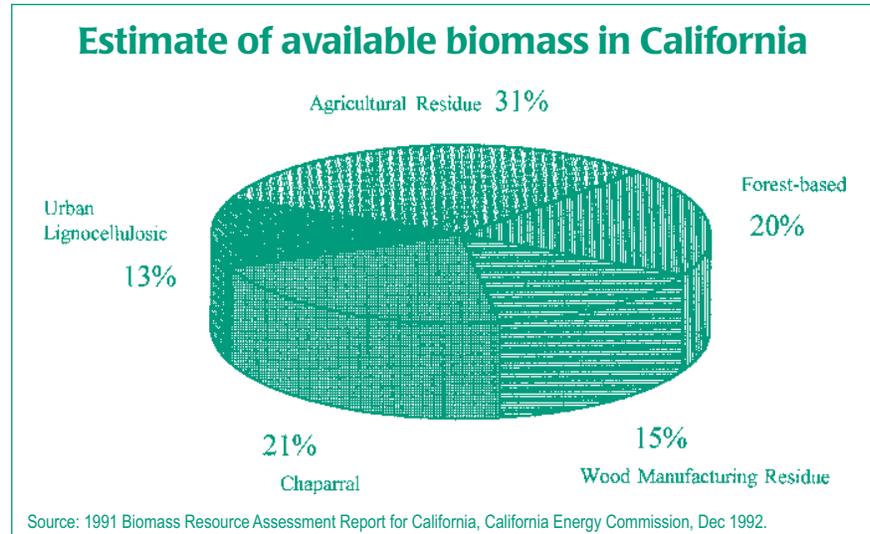
The term biomass is not well defined and often means different things to different people. In the forest community, biomass is nearly synonymous with the use of woody materials to generate electricity. However it is much more than fuel chips for combustion power plants.

I like to think of biomass as any biological plant or plant by-product that accumulates in quantities great enough to create a hazard or disposal problem or plants that are grown as an energy or feedstock crop.

Following this definition, the major sources of biomass in California include:

- ◆ **Forest-based**—harvesting residue, forest thinnings, dead and dying, small diameter, ill formed and other non-merchantable trees, undergrowth, and energy plantations.
- ◆ **Wood Manufacturing Residue**—sawmill and secondary wood manufacturing waste, including chips, solid wood scrap, and sawdust.
- ◆ **Chaparral**—dense thickets of shrubs and small trees in non-forested, undeveloped lands.
- ◆ **Urban Lignocellulosic Wastes**—removals and prunings of city trees, yard waste, woody fiber-consumer waste (lumber and wood products but not paper).
- ◆ **Agricultural Residue**—rice straw, cotton stalks, orchard prunings and removals, nut hulls, and similar materials (not including animal manure or food processing wastes).

The forest-based and wood manufacturing residue make up more than one-third of the approximately 36 million bone dry tons of biomass produced in



California each year from the above sources (1991 California Energy Commission estimate).

Biomass is an important issue in California because excessive accumulations in forest and wildland regions may have an adverse effect on ecosystem health and often increase the fire hazard. Biomass has a direct effect on wildfire and the resultant catastrophic losses to structures, the environment, and obviously the potential loss of human life.

The California Department of Forestry & Fire Protection estimates that over 2.5 million people and 1 million structures are at risk from wildland fires in the state. It is generally recognized that past forest management practices, drought conditions, and beetle infestations have resulted in an unprecedented accumulation of biomass in many urban, wildland, and forest regions. Undoubtedly, biomass is an important component of the ecosystem and what constitutes an excessive accumulation is continually being debated. What is clear, however, is that as biomass levels increase the fire risk increases and fuel reduction efforts are warranted.

The reduction of forest-based biomass as a potential solution to many wildfire and forest health problems creates a new concern—what to do with the biomass that is removed. Traditional biomass disposal methods of burning or landfill (especially in urban areas) are facing many economic and environmental restraints that limit their use. The operating and containment costs, reduction in allowable burn days, air quality concerns, and the extremely high fuel load levels found in many regions may limit the use of prescribed burning. High landfill costs and the state-mandated diversion of 50% of materials from landfills to other uses by the year 2000 (State Assembly Bill 939), make landfill disposal an unreasonable option in most cases.

Forest-based biomass utilization is an important issue in California because it may help offset the high cost of fuel reduction. Unfortunately, as reported by the UC Forest Products Laboratory (UCFPL) in a preliminary study of the utilization potential of biomass, the options are limited for many conventional products because of the low quality



material properties of much of the biomass.

From a technical point of view, combustion processes appear to be the most viable, but current economic realities limit their use. Since the early 1970s the biomass-based electricity power plants have played a vital role. At their peak, biomass and co-generation plants (those that produce both electricity and process energy for manufacturing) had a total capacity of 975 megawatts of electricity which used about 16 million tons (wet basis, not dried) of biomass per year from all sources.

As a result of negotiations involved in the deregulation of electricity (State Assembly Bill 1890), electrical power plants using biomass fuel are at a competitive disadvantage with most other electrical generation methods in the state. Also, equipment changes needed to comply with the more restrictive air quality regulations that are expected in the near future will likely add to the operating costs of these plants. As a result only a handful of biomass plants remain.

In 1998, the biomass power plant capacity is expected to be about 45% less than the 1995 levels, reducing total biomass consumption to about 8 million tons, of which about 60% will be forest-based and wood manufacturing residue. Since the biomass fuel market is one of the few options presently available for forest-based biomass, this decrease will likely have a serious impact on fuel reduction management, unless other utilization options are created.

Another possible energy production method receiving serious attention is the conversion of biomass to ethanol. A strong demand is expected for ethanol as a clean-burning gasoline additive, but very little ethanol is produced in California. In a recent feasibility study initiated by the Quincy Library Group, it was determined that an adequate supply of biomass existed within a 25 mile radius of several potential sites to support a successful 15 million gallons per year. This is about 10 percent of the current western ethanol needs in the northern

Biomass is an important issue in California because excessive accumulations may increase the fire hazard.

Sierra of California. If refineries begin using ethanol instead of the additive MTBE in reformulated gasoline, then feasibility of a biomass-based California ethanol plant would be even more positive. Tosco, one of the California refineries, announced in April, 1998 that they were beginning to substitute ethanol in place of MTBE for gasoline in the San Francisco market.

Using forest-based biomass in other conventional products is technically feasible but unlikely because of raw material quality concerns, high manufacturing costs, and/or market conditions. For example, densified solid fuels such as pellets and briquettes are presently made from manufacturing wood waste and could be made from other biomass materials, but the over capacity of the industry and the uncertain future of the fuel pellet market make this a risky venture. Compost and mulch are often a popular solution, especially in urban areas, but the market is close to saturation. Small diameter trees could be made into conventional lumber but the manufacturing costs would be high and the lumber would be low quality.

Biomass is currently used in the pulp and paper industry, but the demand is currently being met and utilizing additional biomass in this market is unlikely. Composite wood products, such as Oriented Strand Board, Medium Density Fiberboard, Laminated Veneer Lumber, and Oriented Strand Lumber could be

manufactured from some biomass materials, but it is unlikely because there is an excess capacity with existing plants using single species or clean wood manufacturing residue.

Combining wood fibers with plastic polymers, cement or other inorganic binders have the potential to use a wide variety of raw material sources, including biomass materials, but at present only pulpwood quality wood fibers are being used. These fiber/polymer and particle/cement mixtures can be molded into a variety of shapes and sizes to make a wide assortment of products. The potential of these mixtures is just beginning to be explored.

There appears to be little disagreement that large quantities of biomass exist and that the volume is increasing rapidly. The question, "is it a valuable resource" is still unanswered. Many products have the potential to use biomass-based raw materials, but with sufficient quantities of higher quality raw materials available it is unlikely that biomass will be used unless incentives for their use are available to the manufacturers. Creative approaches to biomass reduction and utilization must consider:

- ◆ Assessment of biomass availability as a raw material
- ◆ Models for communities to assess solutions for biomass fuels reduction
- ◆ Research and development of high value uses of biomass in consumer products
- ◆ Effective, low-cost biomass harvesting equipment
- ◆ Low emission incineration techniques
- ◆ Support of biomass-produced electricity
- ◆ Continued development of ethanol technology based on biomass fuel
- ◆ Studies on disposal of biomass and ash in wildlands and agricultural soils

John Shelly is a Cooperative Extension Advisor in Forest Products and Biomass, University of California Forest Products Laboratory, Richmond, CA. ▲



Landowner Curriculum

Planting: site preparation & species selection

A seedling faces a great number of difficulties on its way to becoming a tree. There is the constant threat of animals gnawing it, deer or livestock may browse or trample it, frost may heave it from the soil. Seedlings are susceptible to being burned, drowned, shaded or starved. Whether artificially planted or naturally germinated, seedlings need all the help you can give them.

Minimize the Threats

Consider every likely threat and try to minimize it. Posting the area, fencing out livestock, and removing brush piles that harbor rabbits and rodents will all help seedlings survive. The greatest challenge, however, is making sure they get enough soil moisture and nutrients.

Site preparation is essential in limiting the competition a seedling will face in its first years, the most critical to survival. Without proper site preparation your entire planting investment might be lost. The objective is to reduce competition and potential animal damage. It is required for good seed germination in natural regeneration systems. All site preparation must minimize disturbance of valuable topsoil.

Studies have shown that neglecting site preparation can lead to seedling losses ranging from 40% to near 100%. With good site preparation and proper planting techniques, a landowner can expect less than 20% seedling mortality.

Management of competing vegetation does not necessarily end after planting. When brush is especially vigorous you may have to repeat some treatments. Every planting effort should be followed by a regeneration survey in which a landowner visits new planting sites as often as possible to determine if follow-up work is needed. At minimum, the site

should be inspected at least once a year for the first three years. The Forest Practice Rules require stocking reports following a harvest until the harvested stands reach required stocking levels.

Planting trees is a major investment in your property. This investment is recognized by the land market. Potential buyers are willing to pay more for a piece of land that has been successfully regenerated. It is in your best interest to assure successful planting with adequate site preparation, using proper planting techniques and careful follow-up.

Mechanical Preparation

Various devices are used for mechanical site preparation. Treeless areas usually require the removal of grasses by hand scalping or tractor mounted brush rake. Care must be taken to prevent valuable topsoil from being removed, reducing site productivity. Discing and ripping with a tractor can reduce soil compaction and improve root aeration if this will not create erosion problems.

Brushy areas may require crushing, chopping or brush raking with high-powered equipment. Brush rakes mounted on a tractor or crawler are used to uproot and push brush into piles (called windrows) to rot or be burned. With a careful operator, very little soil is scraped up, helping to maintain soil productivity.

Unburned windrows may serve as habitat for small animals. Depending on landowner objectives this can be an asset or liability. Landowners who wish to encourage wildlife such as quail or rabbits might want to leave the windrows. This is likely to result in some seedling loss, mainly from small rodents.

Fire

Used with care, controlled fire is an inexpensive method to reduce logging debris (called slash) or large brush build-

ups. Controlled burning also reduces fire hazard by using up fuel.

Burning alone may not be effective for complete site preparation since fire encourages the growth of some undesirable shrub species. Post planting treatment of brush might be necessary.

Fire may have other undesirable effects on soil. With an intense burn, soil nutrients may be lost. Soil may become less permeable, that is, water will run off the surface causing erosion rather than going into the soil to be used by the roots. This, combined with a lack of plants to hold the soil, increases the chance of serious erosion and lessens the chance for a plantation's survival.

A professional forester and local fire officials must be consulted before any controlled burning. Prescribed burns require a fire permit along with a plan to control the fire should it escape. You may be required to submit a smoke management or air pollution control plan. The landowner may be held legally responsible for all damages and costs should the fire escape.

While there are some negatives involved in using fire as a site preparation tool, used carefully fire can be highly effective and very cost efficient. Fire is the tool of choice for site preparation in many commercial operations.

Chemical Site Preparation

Herbicides are used in forestry operations to reduce competition from weeds, especially in follow-up treatments. They are often the most cost-effective method for large areas. Herbicides can be sprayed over large areas quickly from the air, or more slowly but under closer control from the ground.

The use of herbicides is controversial. Many concerned people consider them a potential threat to the environment. Any chemical, improperly applied, is danger-



ous and care must be exercised. An applicator's license and liability insurance may be required for certain herbicides.

Using the correct herbicide, at the proper rate, and at the right time are important considerations. By federal law, every herbicide must be registered with the Environmental Protection Agency and be labeled with proper use and warning information. You are required by law to **read the label** and follow the instructions. Your county agricultural commissioner can provide information on the registration of different chemicals used in the forest, and any legal considerations that may apply.

Artificial Regeneration

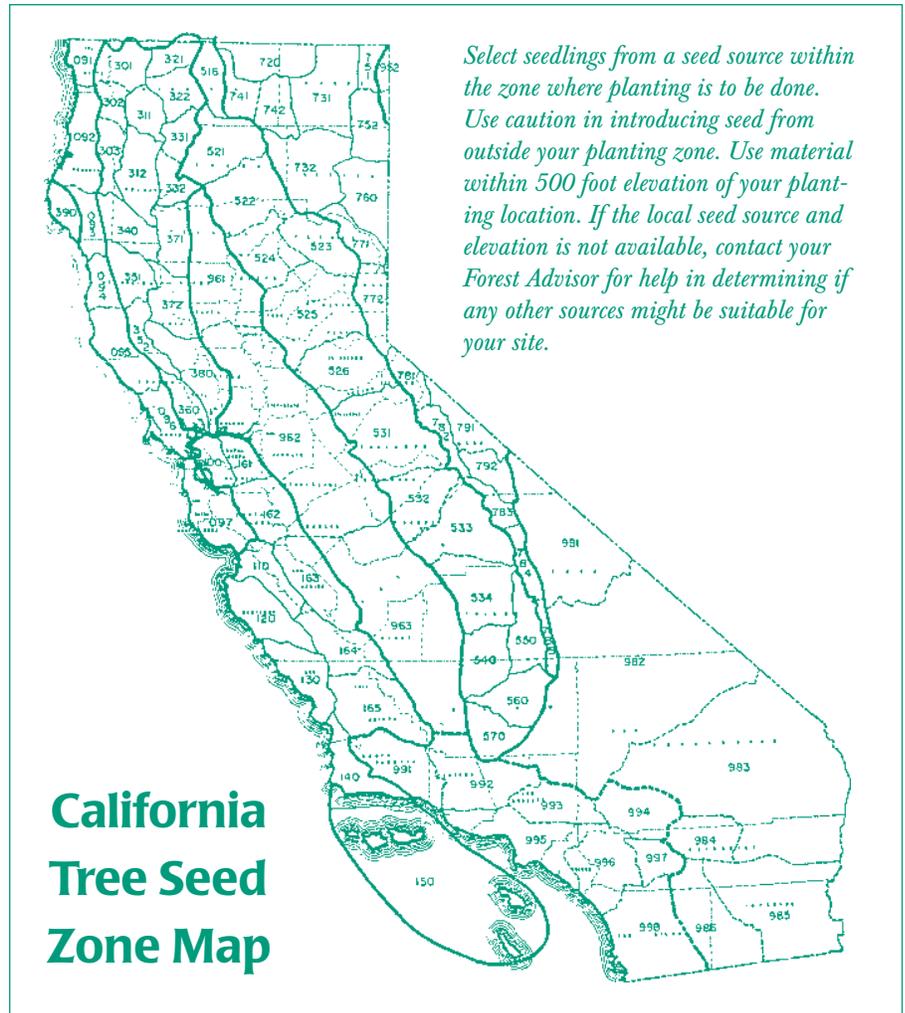
The choice in artificial regeneration is between direct seeding and planting. Seeding has the advantage of lower initial costs. A major disadvantage is that seedling spacing may be highly irregular. Losses due to animals are common. Also, it takes extra time for the seeds to germinate and grow. Young trees grown from seed are more susceptible to weed competition than planted seedlings which have an early height advantage.

Both broadcast seeding, spreading seed over the entire area, and spot seeding, placing seed at specific sites, have been occasionally effective in California. However, animals, insects, drought, freezing, heat, and fungi can all take their toll. Successful seeding is always accompanied by good site preparation and animal control practices.

The most effective artificial regeneration method has been planting seedlings. Spacing, species, and genetic composition can be controlled. Seedlings reduce the time from harvest until establishment of a new crop. The key to success is proper planning which needs to start about a year in advance. To get the best selection of seedlings, you need to order them from a nursery by March or April to plant the next spring.

Stock Selection

When picking planting stock it is usually recommended you choose



Select seedlings from a seed source within the zone where planting is to be done. Use caution in introducing seed from outside your planting zone. Use material within 500 foot elevation of your planting location. If the local seed source and elevation is not available, contact your Forest Advisor for help in determining if any other sources might be suitable for your site.

California Tree Seed Zone Map

species already growing on the site or nearby. Seedling survival depends on how well it is adapted to the planting site. Adaptability depends on elevation, aspect, available moisture, and local soil conditions.

CDF has established tree seed zones for the state (see map above). These zones match seed and seedlings to local conditions. The seedlings selected should come from the same tree seed zone and elevation as your planting site. Contact your local CDF office to establish which zone you are in. You may wish to send a topographic map with your planting area outlined to the nursery when ordering.

Two types of seedlings are available, bare root and containerized. Nursery catalogs list bare root planting stock as 1-0, 2-0, 2-2 or some other combinations of

two numerals. The first numeral refers to the number of years the tree spent in a seed bed. The second is the number of years the tree spent in a transplant bed. Therefore, 2-2 stock is 4 years old. Trees that come directly from a seed bed (1-0, 2-0, 3-0, are called seedlings. Those that come from a transplant bed are called transplants. A rule of thumb is to use transplants on difficult sites and seedlings for easier sites. Transplants cost considerably more because it takes more time and labor to produce them.

*This abridged article is one of over 75 topics covered in **Working in the Woods: A Guide for California's Forest Landowners**. For information or to get a copy (on CD-ROM or hard copy), contact the Forest Stewardship Helpline, 1-800-738-TREE.* ▲



Resources

Stewardship planning workshops in Humboldt, Plumas, & Sierra Counties

This summer two sets of workshops will be conducted by Cooperative Extension. These workshops will focus on stewardship planning for forested properties using recently developed curricula.

The workshops will run for three consecutive Saturdays and participants must agree to attend the whole series. An expected outcome will be a draft stewardship plan for each landowner.

The intended audience for these workshops is the novice landowner who wants to know more about his or her property. Couples, land partners, and families are welcome. Workshops

will include both classroom and field teaching experiences.

August 8, 15, 22 in Humboldt County. Contact Kim Rodrigues, Humboldt County Cooperative Extension, (707) 445-7351.

September 12, 19 and 26 in Plumas or Sierra Counties. Contact Mike DeLasaux, Plumas/Sierra Counties Cooperative Extension, (530) 283-6125.

Space is very limited so contact Kim or Mike soon! Additional locations will be announced in the future so watch this newsletter.

Firesafe handbook for foothills and other bioregions

The Defensible Space and Healthy Forest Handbook: A Guide to Reducing the Wildfire Threat is an excellent resource, prepared by the Placer Hills Fire Protection District, Placer County RCD and the NRCS for residents of the Sierra Nevada foothills (see page 3). The booklet is available for \$15.

For those in other bioregions, the Placer RCD has offered to make custom changes and provide camera-ready copy to make the book relevant to any area. Contact the Placer County RCD, 251 Auburn Ravine Rd, Suite 201, Auburn, CA 95603-3719 or call them at (916) 885-3046.

Technical Assistance Resources

Many agencies are available to provide technical assistance, referrals, information, education, land management plan assistance, and advice.

California Department of Forestry and Fire Protection

Forestry Assistance Program
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carcd@ns.net

California Resources Agency:

California Environmental Resources Evaluation System (CERES)
Deanne DiPietro
(916) 653-8614
deanne@ceres.ca.gov

Coastal Conservancy

Neal Fishman/Carol Arnold
(510) 286-4181

Farm Service Agency

Larry Plumb
(916) 498-5300

Natural Resources Conservation Service

Jerry Reioux
(916) 757-8256
(209) 946-6229
jerry.reioux@ca.nrcs.usda.gov

California Dept of Fish & Game

Terry Mansfield
(916) 653-1921
tmansfie@hq.dfg.ca.gov

U.C. Cooperative Extension Forestry

John LeBlanc
(510) 642-6678
jleblanc@nature.berkeley.edu
Richard Harris
(510) 642-2360
rrharris@nature.berkeley.edu

USDA Forest Service

Sandra Stone
(415) 705-2587

California Stewardship Helpline

(800) 738-TREE

Salmon Websites

These websites will help you keep up with new developments in salmonid issues. You can also go to the California Stewardship Program Website at <http://ceres.ca.gov/foreststeward>.

Pacific Salmon Information via the Internet
<http://kingfish.ssp.nmfs.gov/salmon/salmon.html>

For the Sake of the Salmon
<http://www.4sos.org/>

National Marine Fisheries Service—Southwest Region
<http://swr.ucsd.edu/>

MNFS—Northwest Regional Office
<http://www.nwr.noaa.gov/>

NW Fishletter
<http://www.newsdata.com/enernet/fishnet/fishletter/fishletter.html>

Salmon and the ESA in your Neighborhood
<http://www.4sos.org/homepage/watershed/esainfo.html>



Calendar

June 27-28, 1998

Mushrooms: Farming, Spawn Production & Marketing

Richmond, CA
UC Berkeley Extension
Chris Markus 510-643-0598; Mo-Mei Chen 510-215-4252

July 5-9, 1998

Balancing Resource Issues: Land, Water, People

San Diego, CA
Soil and Water Conservation Society
Sue Ballantine 515-289-2331, ext. 16
<sueb@swcs.org>

July 6-8, 1998

Board of Forestry

Eureka
Board of Forestry
Donna Stadler 916-653-8007

July 13-15, 1998

Archaeological Training - 3-Day Class

Redding, CA
CDF & CLFA.; \$300
Hazel Jackson 209-293-7323, fax 209-293-7544 <clfa@volcano.net>

July 16 or 17, 1998

Archaeological Training - 1-Day Refresher Class

Redding/Burney, CA
CDF & CLFA.; \$100
Hazel Jackson 209-293-7323, fax 209-293-7544 <clfa@volcano.net>

July 19-25, 1998

Forestry Institute for Teachers (FIT)

Redwood, Humboldt State University
Arcata, CA
NorCal Society of American Foresters
1-800-738-8733 <nscsaf@interserv.com>
K-12 Teachers

July 22, 1998

Will Habitat Conservation Plans Save the Endangered Species Act?

Sacramento, CA
UC Davis Extension; \$175
Linda Pike 530-757-8878
<http://universityextension.ucdavis.edu>

July 30-August 2, 1998

Green and Gold: California's Environments-Memories and Visions

Santa Cruz
Cal. Council for the Humanities,
American Soc. for Env. History, etc.
Carolyn Merchant
<greengold@nature.berkeley.edu>
<http://www.cnr.berkeley.edu/departments/espm/env-hist/>

August 1-8, 1998

Leadership Institute for Adopt-A-Watershed

Adopt-A-Watershed
Kim Stokeley 530-628-5334
K-12 teachers, site coordinators,
academic representatives
Mt. Bachelor Village Resort on the
Deshutes River

August 3-5, 1998

Board of Forestry

San Diego
Board of Forestry
Donna Stadler 916-653-8007

August 9-14, 1998

North American Forest Soils Conference: Forest Soils & Ecosystem Sustainability

Tahoe City, CA
Soil Sci. Soc. of America, Canadian Inst.
of Forestry, Soil Sci. Soc., SAF, etc.; \$200
Dr. Dev Joslin <jdjoslin@tva.gov>
<http://weber.u.washington.edu/~robh/S-7/NAFSC>

August 12-14, 1998

Salmonids: Their Biological Needs & Public Policy

Bodega Bay Marine Lab
Renewable Resources & Sea Grant
Extension Programs
Kim Beaird 530-752-7699
<kabeaird@ucdavis.edu>; Joni Rippee
510-643-5429
<riptide@nature.berkeley.edu>

August 16-22, 1998

Forestry Institute for Teachers (FIT)

Meadow Valley, UC Forestry Camp
Quincy, CA
NorCal Society of American Foresters
1-800-738-8733 <nscsaf@interserv.com>
K-12 Teachers

September 27-30, 1998

Workshop on Oak Physiology & Growth Problems in Oak Plantings

South Lake Tahoe, CA
IHRMP; \$60
Joni Rippee 510-643-5429, fax 510-643-5438 <riptide@nature.berkeley.edu>
<http://danr.ucop.edu/ihrmp/>

October 2-4, 1998

CalEPPC Symposium '98, Working Smart, Together

Ontario
Cal. Exotic Pest Plant Council ; \$40-\$75
Sally Davis 714-888-8347
<sallydavis@aol.com>

October 2-3, 1998

Family Forest Management Conference

Santa Rosa
Forest Landowners of California
Dan Weldon 916-972-0273
<dweldon@forestlandowners.org>

October 2-3, 1998

NorCal SAF Fall Field Tour

High Sierras, Fresno
NorCal Society of American Foresters
1-800-738-8733 <nscsaf@interserv.com>

October 19-23, 1998

Western Watersheds: Science, Sense, & Strategies "What We Can Learn From Each Other"

Boise, ID
Watershed Mgmt. Council
Dr. Charles Slaughter 208-422-0722,
cslaugh@nwr.cars.pn.usbr.gov
<http://watershed.org/wmc/index.html>

For more information, call the number given or the Forest Stewardship Helpline, 1-800-738-TREE. To submit an event or to receive this calendar by e-mail, contact Sherry Cooper, shcooper@ucdavis.edu

ONLINE CALENDAR!

A more comprehensive and updated calendar can be found at the California Forest Stewardship website at

<http://ceres.ca.gov/foreststeward>

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Safe Practices

Chain saw safety is common-sense

Any chain saw can be as savage as a shark to those who mishandle it. If you want to get the best from your chain saw without being bitten, always treat it with great respect. If you are a beginner or an occasional user, do not try to act like a full-time professional who can safely do things with a chain saw that would land the novice in a hospital. Felling, limbing, bucking, and trimming trees can all be hazardous tasks if not done with due care. Always be aware of what you're working on and what's around you.

Safety Preparation

Safety begins before actual work begins. Protect eyes, head, ears, feet, and hands with:

- ◆ Hard hat or bump cap
- ◆ Safety glasses or goggles
- ◆ Trim fitting trousers, shirts, and jackets (to reduce chance of clothes tangling in saw)
- ◆ Avoid scarves, long skirts, and tie back long hair

- ◆ Light, non-slip gloves to protect hands from abrasions and wood cuts
- ◆ Nylon protective leg chaps
- ◆ Footwear with good grip to prevent falls—boots will protect lower legs; steel toe safety boots will protect toes
- ◆ Protective devices against the 100-decibel or higher saw noise level. Good earmuffs or comfortable molded earplugs will allow a full work day without ear damage and fatigue
- ◆ A chain saw sized to fit the task

Backup Equipment

Other backup equipment is essential. A first aid kit should be on hand.

Shovels and fire extinguishers are required by law in some forests. A three-gallon, pressure-type garden sprayer with a special medium spray pattern tip makes a good extinguisher for forest conditions. Dry chemical AB class extinguishers are also good.

Backup tools should also include axe, sledge, and wedges. A saw case or protective chain scabbard reduces damage to the sharp chain during transport.



Fuel and chain oil containers should be sturdy and spillproof.

Approach

- ◆ Keep work area free of obstacles to prevent stumbling
- ◆ When carrying a chain saw, the blade is pointed to the rear and muffler away from the body
- ◆ When starting and during operation, the body should be positioned to the left of the chain
- ◆ Start the chain saw on the ground
- ◆ Do not allow the tip of the bar to contact any solid object
- ◆ Never cut above shoulder height with a chain saw
- ◆ Never approach a chain saw operator unless he/she has acknowledged your presence

Maintenance

- ◆ When fueling the chain saw, do not smoke, don't refuel on turf areas, use a funnel, and keep fuel in an approved container.
- ◆ Always follow the manufacturer's recommendations for maintenance

Sources: *Chain Saw Safety*, EB0727, WSU Cooperative Extension, 1980 and *The Defensible Space and Healthy Forest Handbook*, Placer RCD, 1997. ▲

How can the *Forestland Steward* newsletter help you?

I'd like to see more information on _____

My suggestion is _____

Add me to the mailing list / change my address:

Name _____

Address _____

City, Zip _____ Phone _____

Send to CDF, Forestry Assistance, P.O. Box 944246, Sacramento, CA 94244-2460.
Phone: (916) 653-8286; Fax: (916) 653-8957; e-mail: jim_geiger@fire.ca.gov